

14 APR 1965

MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Research and Development Project Approval Request for the Development of Advanced Anamorphic Eye Pieces

REFERENCE : Chief, Administrative Staff, O/DDI, Memorandum dated 4 February 1964: Approval of Research and Development Activities

In accordance with the authority delegated in paragraph 3. of the reference, approval is requested to obligate funds in the amount of  for the development of advanced ~~anamorphic eye pieces~~ as outlined in attachment "A".

Colonel, USAF  
Assistant for Plans and Development, NPIC

APPROVED:

ARTHUR C. LUNDAHL  
Director, NPIC

15 APR 1965  
Date

Attachment: "A"

Distribution

Orig & 2 - LB/SS  
1 - O/Dir  
1 - P&DS

LB/SS/NPIC/ (5 Mar 1965)

Declass Review by NGA.

R & D CATALOG FORM

DATE

22 March 1965

1. PROJECT TITLE/CODE NAME

Advanced Anamorphic Eyepieces

2. SHORT PROJECT DESCRIPTION

The study, design, and manufacture of a pair of Advanced Variable Ratio Anamorphic Eyepieces.

5. CLASS OF CONTRACTOR

Manufacturer

6. TYPE OF CONTRACT

CPFF

7. FUNDS

FY 19 \$

8. REQUISITION NO.

NA

9. BUDGET PROJECT NO.

NP-V-28

FY 1965

10. EFFECTIVE CONTRACT DATE  
(Begin - end)

May 1965 - July 1966 Est.

11. SECURITY CLASS.

A.A. - Confidential

T. - Unclassified

W. - Unclassified

FY 19 \$

12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION

DDI/NPIC/P&DS/

13. REQUIREMENT/AUTHORITY

All processes within NPIC that require direct microstereoscopic viewing of film have a need for an instrument with an optical anamorphic stretch capability. The operational components that will utilize such equipment are TID, PID, PAG and PD.

14. TYPE OF WORK TO BE DONE

Engineering Development

15. CATEGORIES OF EFFORT

MAJOR CATEGORY

Viewers & Other Interpretation  
Equipment

SUB-CATEGORIES

Interpretation/Analysis

Photo Reconnaissance

Visual

16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC.

The result of this project will be one prototype pair of advanced, operationally-useful, variable-ratio, anamorphic eyepieces. These eyepieces will be considerably smaller than the current models, while the optical characteristics of the present equipment will be maintained or improved. Because of a considerable (Contd)

17. SUPPORTING OR RELATED CONTRACTS (Agency & Other)/COORDINATION

As a result of contacts throughout industry and the Intelligence Community, it has been determined that equivalent eyepieces are not presently under development.

18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT (Continue on additional page if required)

Although two sets of variable-ratio, anamorphic eyepieces have been developed for operational use, the models now being used have serious limitations because they were developed on a crash basis under a program to determine if the principle of variable-ratio anamorphism would solve an otherwise impossible operational problem; that of interpreters being unable to stereoscopically fuse conjugate images on geometrically distorted photography; e.g., high oblique and convergent panoramic. Because of this lack of stereo fusion, efficiency of intelligence extraction (Contd)

19. APPROVED BY AND DATE

OFFICE

DEPUTY DIRECTOR

DDCI

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R & D CATALOG FORM (Continued)

16.

reduction in size, the operation of instruments utilizing these eyepieces will be less fatiguing than is currently the case.

18.

was significantly impaired.

Two prototype anamorphic eyepieces were built to determine if the use of optical anamorphism would enable the photo interpreter to obtain relatively good stereo fusion. The prototype anamorphic eyepieces proved this feasible, however, because of their physical configuration, they cause considerable operator discomfort and fatigue.

Even though a few production models of one of the original prototypes are being purchased, the overall problem is far from being solved, and since the demand for instruments employing the anamorphic principle will become even greater in the future, anamorphic eyepieces must be designed for the highest degree of operator comfort possible with the required performance characteristics.

Since the [ ] Zoom 70 is the microstereoscope most extensively used within NPIC, it has been decided to build an Advanced Anamorphic System for this instrument. [ ] will perform a study under which a number of methods of producing anamorphism are to be investigated. On the basis of the study, the best system will be selected, carried through the final design phase and then a pair of eyepieces will be manufactured. The design goals for these eyepieces are as follows:

1. Variable anamorphic ratio from 1:1 to 1:2.2.
2. Maximum loss of field will not exceed 15% of the total field.
3. Direction of anamorphic stretch will be rotatable through 360°.
4. Loss of resolving power will be no more than 20% as compared to the microscope without the anamorphic system.
5. The anamorphic system will be made as compact as possible with superior human engineering features incorporated.

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R & D CATALOG FORM (Continued)

18.

Under the proposed 14 month contract, [ ] will spend six months a preliminary design study, four months preparing the final design and four additional months manufacturing the final system.

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Because of [ ] previous experience in the variable ratio anamorphic field, they were selected as a sole source supplier for this development. In addition, their experience in designing and manufacturing the Zoom 70 makes them uniquely qualified for this task.

The project is to be negotiated on an [ ] Confidential basis. The required security measures are already in effect at the contractor's plant as a result of other [ ] contracts.

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**SECRET**  
(When Filled In)

**TECHNICAL BACKGROUND PROCUREMENT INFORMATION**

**I. Contractor**

A. Name of \_\_\_\_\_

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B. Evaluation of previous performance: Satisfactory

**II. Brief description of this procurement: Advance/Variable Ratio Anamorphic**

Eye piece

Estimated total amt. \_\_\_\_\_

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A. Deliverable items: One prototype anamorphic eye piece system and  
operational manual

B. Is this procurement for other than a standard, "off the shelf" or slightly modified commercial item? Yes If "yes", is it anticipated that any more of this unit will be procured? Yes If so, a complete set of directly reproducible manufacturing drawings and specifications would normally be included in this procurement. Comments: It would be desirable if these could be obtained.

C. Will contract cover a period of more than 90 days? Yes  
If "yes", are progress reports desired? Yes If so, indicate frequency, content and number of copies desired: Monthly technical progress, anticipated goals, funds expended, four copies.

D. Is any Government-owned property to be provided to the contractor?  
No If so, list and indicate its availability (where, when, etc.) \_\_\_\_\_

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(When Filled In)

SECRET  
(When Filled In)

E. Is any special tooling involved? **Possibly**

F. Security:

1. Association with the Sponsor is **Confidential**

2. The specifications and/or drawings are **Unclassified**

3. The item is **Unclassified**

4. Contractor personnel known to be aware of this proposed procurement:

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5. Other security information **Required security measures are in effect at contractor's plant due to other NPIC Confidential contracts.**

III. Reasons for selection of this source. If other sources were considered, indicate results. If no other sources were considered, list the reasons why this firm is considered to be uniquely qualified to perform this work.

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**[ ] was selected as a sole source supplier because of their past experience in the design and development of anamorphic eyepieces. In addition, their designing and manufacturing of the Zoom 70 microstereoscope makes them uniquely qualified for this task.**

IV. If contract will cover deliverable item(s) state room location where equipment will be installed **NA**. (It is extremely important that the Engineering Data Sheet including room location and any other pertinent facts be submitted to NPIC Engineering Section as far as possible in advance of delivery.)

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V. Technical contact

In the event additional space is required, use the reverse side(s) of this form, with a reference to the item number to which the comment applies.

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P &amp; DS

99841-5

FEB 19 3 03 PM '65

FEB 23 1965 NPIC PROJECT NO.

CONFIDENTIAL  
CLASSIFICATION

RECEIPT OCB/OS

DISSEMINATED OCB/OS

SUPPORT/SERVICE REQUIREMENT

(The following info is required when rqmts are levied by external organizations)

OFFICE \_\_\_\_\_ DATE OF RQMT \_\_\_\_\_ CONTROL NO. \_\_\_\_\_

NPIC DIV/DETACH PROCESSING RQMT \_\_\_\_\_ PROJ OFF \_\_\_\_\_ PHONE \_\_\_\_\_

SUPPORT REQUESTED OF \_\_\_\_\_ PRIORITY \_\_\_\_\_ DATE REQUIRED \_\_\_\_\_

(The following info is required when rqmts are levied for internal support)

DIV/STAFF P&amp;DS \_\_\_\_\_ DATE OF RQMT 18 February 1965 CONTROL NO. \_\_\_\_\_

SUPPORT REQUESTED OF \_\_\_\_\_ P&amp;DS \_\_\_\_\_ PROJ OFF [REDACTED]

PRIORITY \_\_\_\_\_ DATE REQUIRED 30 May 1966

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## 1. BACKGROUND INFORMATION:

- The work requested is in support of a departmental: ☐ Photo interpretation proj.;  
☒ Non-photo interpretation project. will result in: ☐ Hard copy report;  
☐ Informal report (memo); ☒ Basic service only.

Project Description: Advanced Anamorphic Eyepiece, Prototypes

2. SPECIFIC SUPPORT/SERVICE REQUESTED: Support from NPIC will probably consist of:  
☐ Photographic; ☐ Reproduction; ☐ Mensuration; ☐ Graphics; ☐ ADP; ☐ Editing;  
☒ Other (explain below) -- (Include statement as to estimated amount of work required  
 on support component(s); i.e., number of contact prints, enlargements, boards, etc.)

This project covers the investigation design, development test and  
 evaluation of advanced version or versions of current anamorphic eyepieces.  
 Some of these eyepieces may be designed or modified for use on different  
 instruments.

3. URGENCY JUSTIFICATION: (If immediate support is required a statement of justification  
 must be made on this form.)

25X1 DATE OF COMPLETION

CONFIDENTIAL  
CLASSIFICATION

NPIC FM 218 (4-64)